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L1: Entry 3 of 23 File: USPT Jan 15, 2002

DOCUMENT-IDENTIFIER: US 6338859 B1
TITLE: Polymeric micelle compositions

Brief Summary Text (14):
Until now, most studies dealing with the preparation of biodegradable polymeric micelles have been focused on the utilization of PEG for the formation of the hydrophilic shell. See, e.g., X. Zhang, X., et al., Inter. J. Pharm. 132 (1996) 195-206; Yokoyama,M., et al., J. Control. Release 55 (1998) 219-229 and Allen, C., et al., J. Control. Release 63(2000) 275-286.

Detailed Description Text (20):
The indomethacin entrapment efficiency in PVP-PDLLA and PEG-PDLLA micelles was similar at a low drug level. With increased drug loading, the entrapment efficiency of PVP-PDLLA micelles was superior to that of PEG-PDLLA micelles (considering copolymers having the same molecular weight). Without wishing to be bound by theory, it is believed that at low drug ratios the drug is first incorporated in the core and then, at higher ratios, it becomes incorporated into the PVP hydrophilic shell.

L1: Entry 17 of 23 File: USPT May 2, 1995

DOCUMENT-IDENTIFIER: US 5412072 A
TITLE: Water soluble high molecular weight polymerized drug preparation

Detailed Description Text (20):
Laser scattering measurements showed that the micelles of PEG-P(Asp(ADR)) (with a molecular weight of PEG of 4,300, 17 aspartic acid residues per block copolymer chain, 31 mol % adriamycin) in an isotonic solution of phosphoric acid (pH 7.4) are 57 nm in weight-average diameter and 49 nm in number-average diameter (see FIG. 5). As shown in FIG. 3, the gel-filtration HPLC showed that most parts of the original peak move toward the side of small molecular weight by addition of a surface-active agent, sodium dodecyl sulfate (SDS), and that is, destruction of high-molecular micelles by the SDS was observed. The PEG-P(Asp(ADR)) of other proportions formed micelles from 30 to 80 nm in 5 diameter.

L1: Entry 15 of 23 File: USPT Dec 2, 1997

DOCUMENT-IDENTIFIER: US 5693751 A
TITLE: Water soluble high molecular weight polymerized drug preparation

Detailed Description Text (20):
Laser scattering measurements showed that the micelles of PEG-P(Asp(ADR)) (with a molecular Weight of PEG of 4,300, 17 aspartic acid residues per block copolymer chain, 31 mol % adriamycin) in an isotonic solution of phosphoric acid (pH 7.4) are 57 nm in weight-average diameter and 49 nm in number-average diameter (see FIG. 6). As shown in FIG. 3, the gel-filtration HPLC showed that most parts of the original peak move toward the side of small molecular weight by addition of a surface-active agent, sodium dodecyl sulfate (SDS), and that is, destruction of high-molecular micelles by the SDS was observed. The PEG-P(Asp(ADR)) of other proportions formed micelles from 30 to 80 nm in diameter.

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L1: Entry 13 of 23 File: USPT Oct 27, 1998

DOCUMENT-IDENTIFIER: US 5827533 A
**** See image for Certificate of Correction ****
TITLE: Liposomes containing active agents aggregated with lipid surfactants

Drawing Description Text (13):
FIG. 10 is a scale drawing of a MOPC micelle at the surface of a PEG-grafted bilayer (PEG-lipid density of approximately 5 mol %), with micelle dimensions (66 .ANG..times.86 .ANG.) calculated as described herein and size of each PEG "mushroom" (RF=19 .ANG.) calculated from the Flory radius as described herein.

Drawing Description Text (14):
FIG. 11A is a schematic showing a MOPC micelle at a lipid bilayer interface, where the lipid bilayer contains a low surface concentration of grafted PEG which just allows the micelle to come into intimate contact with the bilayer interface (i.e., headgroup intermixing). The micelle plane of contact with the PEG "mushrooms" is indicated by an arrow.

Drawing Description Text (25):
FIG. 19 is a schematic of a PEG-lipid micelle, where the shaded region represents a PEG-rich layer around the micelle created by PEG grafted onto the lipids of the micelle.

Detailed Description Text (8):
In one series of experiments, the present inventors studied the influence of grafted PEG(750) as PEG-lipids on monooleoylphosphatidylcholine (MOPC) monomer exchange and micelle fusion with lipid bilayer vesicle membranes. The experimental results show that PEG(750)-lipid has a strong inhibitory effect such that micelle-membrane fusion decreases with increasing surface density of grafted PEG(750). At approximately 20 mol % PEG-lipid (corresponding to complete coverage of the membrane surface by PEG(750) "mushroom" structures as described below), micelle/membrane fusion is essentially prevented. The experimental data of the present inventors are well described by a model in which micelle-membrane fusion is considered a first order reaction process. The modeling of micelle-membrane fusion in the presence of grafted PEG(750), and the consideration of geometry characteristics of both PEG(750) "mushroom" and MOPC micelle, show that micelles must be in intimate contact with the headgroups of the membrane lipids in order for the fusion process to occur. Thermodynamic analysis and stationary equilibrium both suggest that the solution properties of surfactant in the aqueous and bilayer phases are not ideal, and that the surfactant molecules are slightly aggregated on average as trimers in the aqueous phase below the CMC. There may also be aggregation of surfactant molecules in the vesicle bilayer when exposed to surfactant concentrations above the CMC and this would be a first indication of defect formation that ultimately results in vesicle membrane breakdown and dissolution of the vesicle.

Detailed Description Text (28):
In liposomes according to the present invention, the lipid bilayer contains a percentage of polymer-grafted lipids sufficient to inhibit micelle/membrane fusion. The percentage of polymer-grafted lipid required to inhibit micelle/membrane fusion will vary depending on the specific polymer used and its molecular weight, and the lipid composition of the micelles contained within the liposome. It will further be apparent to those skilled in the art that the percentage of polymer can be varied to affect the stability of liposomes in vivo, with increasing amounts of polymer used to

provide increasing liposome half-life. Thus liposomes according to the present invention may contain a minimum amount of polymer-grafted lipids sufficient to reduce (but not prevent) fusion of the membrane with micelles contained within the liposome (e.g., 1 mol % of PEG(750) where micelles are MOPC or other low-CMC surfactants), to an amount sufficient to essentially completely inhibit such micelle/membrane fusion (e.g.,.gtoreq.20 mol % PEG(750)). The specific proportions of polymer will vary depending on the polymer utilized; the composition contained within the liposome, and the desired stability (or half-life) of the liposome. One skilled in the art will be able to determine desirable proportions using techniques described herein and available in the art.

Detailed Description Text (59):
Given the energetic and kinetic model of micelle/membrane fusion described herein, protective molecules other than polymers can also be used to formulate liposome membranes capable of containing active agents aggregated with lipid surfactants. In other words, protective molecules which extend beyond or above the surface of the liposome membrane would interfere with and inhibit micelle/membrane fusion in the same general manner as PEG, as discussed above. Where a liposome contained micellar preparations of an active agent, for example, protective molecules on the interior of the liposome membrane would inhibit micelle/membrane fusion and contribute to the stability of the liposome.

Detailed Description Text (175):
The first term in Equation 3 gives the amount of MOPC taken up as monomer, and the second term gives the amount of MOPC taken up through micelle-membrane fusion. This equation shows that when the product of the rate of micelle-membrane fusion and the micelle concentration is small compared to the product of the rate of monomer uptake and the CMC, the amount of MOPC transported through micelle-membrane fusion is negligible. Thus, by changing the micelle concentration in the bathing solution, or, as in the case of the PEG-"protected" bilayers, the rate of micelle-membrane fusion itself, the total amount of MOPC in the membrane can be manipulated.

Detailed Description Text (176):
To predict the dependence of the rate of micelle-membrane fusion and therefore the MOPC uptake due to micelle fusion on the surface density of grafted PEG(750), the geometric characteristics (size and shape) of both the grafted PEG(750) and MOPC micelle are determined (see Examples 2 and 3).

Detailed Description Text (177):
The geometric characteristics for the micelle and the size of the region occupied by the grafted PEG(750) polymer allow both the MOPC micelle and the region occupied by PEG(750) at the lipid bilayer surface to be drawn to scale (FIG. 10). FIG. 10 shows the relative sizes of the MOPC micelle (spheroid, 66 .ANG..times.86 .ANG.) and the PEG-lipids as "mushrooms" (R.sub.F =19 .ANG.) at the vesicle surface for a surface density equivalent to about 5 mol % PEG-lipid. Knowing these dimensions allows a discussion of how the position of the MOPC micelle at the polymer-grafted interface varies as a function of PEG-lipid concentration, and how this determines the extent to which micelle-membrane fusion can occur, i.e., these geometric features determine the contribution of the excluded area of PEG(750) "mushrooms" to the process of micelle-membrane fusion through an activation energy for fusion.

Detailed Description Text (178):
The process of micelle-membrane fusion is not well understood, even for unmodified bilayers. In the model used herein, micelle-membrane fusion is considered to be a first order reaction (Glasstone et al., The Theory of Rate Processes McGraw-Hill Co., New York (1941)). It is assumed that MOPC molecules have two quasistationary states: micelle state and bilayer state. The transition from the micelle state into the bilayer state occurs through an apparent "activation state", which is characterized by an apparent barrier energy. When there is grafted PEG(750) on the membrane surface, the barrier energy increases because MOPC micelles must cross the region occupied by the PEG(750) mushrooms. The increase of the barrier energy due to the presence of PEG therefore represents the additional work required to transport the micelles through the mushroom region. This work is calculated by multiplying the area in the mushroom region occupied by the micelles, and the apparent "surface pressure" of the mushrooms for a given surface density. The increase of the barrier energy, due

to the work required for micelle transport through the mushroom region gives the correction factor for the apparent decrease of the rate of micelle membrane fusion as compared to membranes without PEG(750) . In this case, the rate of micelle-membrane fusion in the presence of PEG(750) k''.sub.bm (PEG) is equal to the product of the same rate for membranes without PEG(750) k''.sub.bm0 and the exponential correction factor: ##EQU8## where n.sub.PEG is the PEG(750) molar concentration in the membrane; a.sub.1 is the area per molecule of the bilayer lipid; and a.sub.m is the cross sectional area of the micelle projected at the surface that corresponds to the point of micelle-membrane fusion (see FIG. 11A).

Detailed Description Text (179):
FIG. 11A schematically shows a MOPC micelle at a lipid bilayer interface, where the lipid bilayer contains a low surface concentration of grafted PEG which just allows the micelle to come into intimate contact with the bilayer interface (i.e., allows intermixing of lipid headgroups from the micelle and the vesicle. The micelle plane of contact with the PEG "mushrooms" is indicated by an arrow on FIG. 11A; the cross-sectional area of the micelle at the plane of contact is 1400 .ANG..sup.2. This is the excess area that gives rise to additional activation energy for passage of the micelle to the lipid surface.

Detailed Description Text (186):
FIG. 13 provides the theoretical model for the data of FIG. 9, in which the additional work to create a denuded area in a polymer "mushroom"-covered lipid bilayer surface reduces the rate of micelle adsorption. The dependence of uptake on mol % PEG-lipid in the membrane (shown in FIG. 13) is found when the apparent projected area occupied by the micelle in the region of PEG(750) mushrooms is equal to 1400 .ANG..sup.2. This area has a corresponding radius of 21 .ANG., which is slightly less than the maximum radius at the mid plane of the micelle core (33 .ANG.). Such a radius is obtained when a micelle is just touching mushrooms on either side and the headgroups of its lipids penetrate the headgroup region of the membrane lipids by a few Angstroms as shown in FIG. 11A. This result suggests that micelle-membrane fusion requires intimate contact between the micelle and membrane, i.e., transfer of MOPC from micelles to bilayer can only occur if the micelle "physically" touches the lipid surface and even enters the head group region of the bilayer. For a 20 mol % PEG-lipid bilayer, the micelle is completely excluded from the lipid surface, intimate contact cannot be made and micelle-membrane fusion is inhibited, as shown in FIG. 11B.

Detailed Description Text (204):
The concentration at which PEG-lipid (DSPE-PEG2000) forms micellar structures was assessed by a simple fluorescence assay using DPH spectroscopy as described earlier (Example 1), and was found to be approximately 1 micromolar. This second trial used SOPC +20 mol % PEG2000 DSPE (0.2 mg/ml, 2.times.10.sup.-4 M total lipid) for the lipid vesicles and 1 mM PEG2000 DSPE as micellar suspension. Using 0.04 mol % of NED-PC as the dye, bulk fluorescence was observed in the lipid vesicles but the vesicles were very rigid and could not be broken simply with micropipet suction. It was as though the PEG-lipids at this high concentration had formed a gel inside the vesicles. Negative stain electron micrograph pictures (not shown) of PEG-lipid micelles show that they are highly filamentous, suggesting that this gel is some sort of an entangled micellar phase. However, fluorescent micelles of PEG-lipids were shown to be encapsulated inside the giant lipid vesicles and we would expect them to also be encapsulated inside extruded unilamellar vesicles.

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L1: Entry 11 of 23 File: USPT Mar 23, 1999

DOCUMENT-IDENTIFIER: US 5885613 A
**** See image for Certificate of Correction ****
TITLE: Bilayer stabilizing components and their use in forming programmable fusogenic liposomes

Detailed Description Text (75):
The presence of lipid micelles is not readily apparent from freeze fracture electron microscopy. Lipid in the micellar phase could, however, contribute to the isotropic signal observed in NMR spectra, and it has previously been shown that PEG-PE conjugates form micelles when hydrated in isolation (Woodle and Lasic, Biochim. Biophys. Acta, 113:171-199 (1992)). As such, the presence of micelles was tested by subjecting a suspension of LUVs to molecular sieve chromatography on Sepharose 4B. The liposomes were of the same composition used for the freeze fracture studies above except that DSPE-PEG.sub.2000 was used in place of DOPE-PEG.sub.2000, and they contained trace amounts of .sup.14 C-DPPC and .sup.3 H-DSPE-PEG.sub.2000. The elution profile is shown in FIG. 8. A single peak containing both the phospholipid and PEG-PE conjugate markers was found in the void volume. A control experiment also shown in FIG. 8 demonstrated that micelles, which formed when PEG-PE was hydrated in isolation, were included into the column and would have been clearly resolved if present in the liposomal preparation.

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Search Results - Record(s) 1 through 23 of 23 returned.

☐ 1. Document ID: US 6521736 B2

L1: Entry 1 of 23 File: USPT Feb 18, 2003

US-PAT-NO: 6521736
DOCUMENT-IDENTIFIER: US 6521736 B2

TITLE: Amphiphilic polymeric materials

DATE-ISSUED: February 18, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Watterson; Arthur C.	Nashua	NH		
Danprasert; Kunya	Bangkapi			TH
Diwan; Anil	West Haven	CT		

US-CL-CURRENT: 528/272; 424/423, 424/448, 424/449, 424/499, 424/501

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

☐ 2. Document ID: US 6417326 B1

L1: Entry 2 of 23 File: USPT Jul 9, 2002

US-PAT-NO: 6417326
DOCUMENT-IDENTIFIER: US 6417326 B1

TITLE: Fusogenic liposomes

DATE-ISSUED: July 9, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Cullis; Pieter R.	Vancouver			CA
Choi; Lewis S. L.	Burnaby			CA
Monck; Myrna	Vancouver			CA
Bailey; Austin L.	Washington	DC		

US-CL-CURRENT: 530/324; 530/326, 530/327

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

☐ 3. Document ID: US 6338859 B1

L1: Entry 3 of 23 File: USPT Jan 15, 2002

US-PAT-NO: 6338859
DOCUMENT-IDENTIFIER: US 6338859 B1

TITLE: Polymeric micelle compositions

DATE-ISSUED: January 15, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Leroux; Jean-Christophe	Montreal			CA
Benahmed; Amina Souad	Montreal			CA

US-CL-CURRENT: 424/489; 424/426, 514/772.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Desc | Image

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☐ 4. Document ID: US 6322810 B1

L1: Entry 4 of 23 File: USPT Nov 27, 2001

US-PAT-NO: 6322810
DOCUMENT-IDENTIFIER: US 6322810 B1

TITLE: Materials and methods for making improved micelle compositions

DATE-ISSUED: November 27, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Alkan-Onyuksel; Hayat	Western Springs	IL	60558	
Rubinstein; Israel	Highland Park	IL	60035	

US-CL-CURRENT: 424/450; 424/1.21, 424/812, 424/9.321, 424/9.51, 424/94.3, 428/402.2, 436/829, 514/21, 514/937

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

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☐ 5. Document ID: US 6296870 B1

L1: Entry 5 of 23 File: USPT Oct 2, 2001

US-PAT-NO: 6296870
DOCUMENT-IDENTIFIER: US 6296870 B1

TITLE: Liposomes containing active agents

DATE-ISSUED: October 2, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Needham; David	Durham	NC		
Sarpal; Ranjit S.	Durham	NC		

US-CL-CURRENT: 424/450; 424/1.21, 424/9.321, 424/9.51, 424/94.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

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☐ 6. Document ID: US 6224903 B1

L1: Entry 6 of 23 File: USPT May 1, 2001

US-PAT-NO: 6224903
DOCUMENT-IDENTIFIER: US 6224903 B1
**** See image for Certificate of Correction ****

TITLE: Polymer-lipid conjugate for fusion of target membranes

DATE-ISSUED: May 1, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Martin; Francis J.	San Francisco	CA		
Zalipsky; Samuel	Redwood City	CA		

US-CL-CURRENT: 424/450; 554/101, 554/35, 554/79, 554/85

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

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☐ 7. Document ID: US 6217886 B1

L1: Entry 7 of 23 File: USPT Apr 17, 2001

US-PAT-NO: 6217886
DOCUMENT-IDENTIFIER: US 6217886 B1

TITLE: Materials and methods for making improved micelle compositions

DATE-ISSUED: April 17, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Onyuksel; Hayat	Western Springs	IL		
Rubinstein; Israel	Highland Park	IL		

US-CL-CURRENT: 424/401; 264/4.1, 264/4.3, 264/4.6, 424/1.21, 424/450, 424/9.321, 424/9.51, 514/2, 514/21, 514/937

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

☐ 8. Document ID: US 6143321 A

L1: Entry 8 of 23 File: USPT Nov 7, 2000

US-PAT-NO: 6143321
DOCUMENT-IDENTIFIER: US 6143321 A

TITLE: Liposomes containing active agents

DATE-ISSUED: November 7, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Needham; David	Durham	NC		
Sarpal; Ranjit S.	Durham	NC		

US-CL-CURRENT: 424/450; 424/1.21, 424/9.321, 424/9.51, 424/94.3

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 9. Document ID: US 6043094 A

L1: Entry 9 of 23 File: USPT Mar 28, 2000

US-PAT-NO: 6043094
DOCUMENT-IDENTIFIER: US 6043094 A

TITLE: Therapeutic liposome composition and method

DATE-ISSUED: March 28, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Martin; Francis J.	San Francisco	CA		
Zalipsky; Samuel	Redwood City	CA		
Huang; Shi Kun	Castro Valley	CA		

US-CL-CURRENT: 435/458; 424/450, 435/375, 530/402, 530/403

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw. Desc | Image

☐ 10. Document ID: US 5891468 A

L1: Entry 10 of 23 File: USPT Apr 6, 1999

US-PAT-NO: 5891468
DOCUMENT-IDENTIFIER: US 5891468 A

TITLE: Fusogenic liposome compositions and method

DATE-ISSUED: April 6, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Martin; Francis J.	San Francisco	CA		
Zalipsky; Samuel	Redwood City	CA		

US-CL-CURRENT: 424/450; 436/829

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

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☐ 11. Document ID: US 5885613 A

L1: Entry 11 of 23 File: USPT Mar 23, 1999

US-PAT-NO: 5885613
DOCUMENT-IDENTIFIER: US 5885613 A
**** See image for Certificate of Correction ****

TITLE: Bilayer stabilizing components and their use in forming programmable fusogenic liposomes

DATE-ISSUED: March 23, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Holland; John W.	Glebe			AU
Madden; Thomas D.	Vancouver			CA
Cullis; Pieter R.	Vancouver			CA

US-CL-CURRENT: 424/450; 428/402.2

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC | Draw Desc | Image

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☐ 12. Document ID: US 5882679 A

L1: Entry 12 of 23 File: USPT Mar 16, 1999

US-PAT-NO: 5882679
DOCUMENT-IDENTIFIER: US 5882679 A

TITLE: Liposomes containing active agents aggregated with lipid surfactants

DATE-ISSUED: March 16, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Needham; David	Durham	NC		

US-CL-CURRENT: 424/450

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWMC
Draw Desc | Image

☐ 13. Document ID: US 5827533 A

L1: Entry 13 of 23 File: USPT Oct 27, 1998

US-PAT-NO: 5827533
DOCUMENT-IDENTIFIER: US 5827533 A
**** See image for Certificate of Correction ****

TITLE: Liposomes containing active agents aggregated with lipid surfactants

DATE-ISSUED: October 27, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Needham; David	Durham	NC		

US-CL-CURRENT: 424/450; 424/1.21, 424/9.32, 424/9.51

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWMC
Draw Desc | Image

☐ 14. Document ID: US 5746998 A

L1: Entry 14 of 23 File: USPT May 5, 1998

US-PAT-NO: 5746998
DOCUMENT-IDENTIFIER: US 5746998 A

TITLE: Targeted co-polymers for radiographic imaging

DATE-ISSUED: May 5, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Torchilin; Vladimir P.	Charlestown	MA		
Trubetskoy; Vladimir S.	Milton	MA		
Wolf; Gerald L.	Winchester	MA		
Gazelle; G. Scott	Hingham	MA		

US-CL-CURRENT: 424/9.4; 424/9.43, 424/9.45, 514/5, 514/561, 514/563, 514/568, 514/617, 514/754, 530/402, 562/465, 562/474, 564/188, 570/182

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWMC
Draw Desc | Image

☐ 15. Document ID: US 5693751 A

L1: Entry 15 of 23 File: USPT Dec 2, 1997

US-PAT-NO: 5693751
DOCUMENT-IDENTIFIER: US 5693751 A

TITLE: Water soluble high molecular weight polymerized drug preparation

DATE-ISSUED: December 2, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Sakurai; Yasuhisa	Tokyo			JP
Okano; Teruo	Chiba-ken			JP
Kataoka; Kazunori	Chiba-ken			JP
Yamada; Noriko	Tokyo			JP
Inoue; Shohei	Tokyo			JP
Yokoyama; Masayuki	Tokyo			JP

US-CL-CURRENT: 530/322; 424/78.08, 424/78.18, 536/6.4, 544/235, 548/422, 562/571

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw. Desc | Image

☐ 16. Document ID: US 5567410 A

L1: Entry 16 of 23 File: USPT Oct 22, 1996

US-PAT-NO: 5567410
DOCUMENT-IDENTIFIER: US 5567410 A
**** See image for Certificate of Correction ****

TITLE: Composotions and methods for radiographic imaging

DATE-ISSUED: October 22, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Torchilin; Vladimir P.	Charlestown	MA		
Trubetskoy; Vladimir S.	Milton	MA		
Wolf; Gerald L.	Winchester	MA		
Gazelle; G. Scott	Hingham	MA		

US-CL-CURRENT: 424/9.4; 424/9.45, 514/5, 514/561, 514/563, 514/568, 514/617, 514/754, 530/402, 562/465, 562/474, 564/188 , 570/182

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | KWIC
Draw. Desc | Image

☐ 17. Document ID: US 5412072 A

L1: Entry 17 of 23 File: USPT May 2, 1995

US-PAT-NO: 5412072
DOCUMENT-IDENTIFIER: US 5412072 A

TITLE: Water soluble high molecular weight polymerized drug preparation